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September 18, 2007

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Re: CRS Site Group Comments on U.S. EPA's Proposed Plan for the CRS Site in Elyria, Ohio

Dear Ms. Massenburg and Mr. Nash:

Attached please find a hard copy of the above-captioned document which was sent electronically on September 13, 2007.

Sincerely,

Douglas A. McWilliams
Chairperson, CRS Site Group

Enclosure

CRS SITE GROUP COMMENTS ON

U.S. EPA'S PROPOSED PLAN FOR THE

CHEMICAL RECOVERY SYSTEMS, INC SITE IN ELYRIA, OHIO

DATED JULY 11, 2007

INTRODUCTION

On July 11, 2007, U.S. EPA announced its Proposed Plan for the Chemical Recovery Systems, Inc. (CRS) Site located in Elyria, Ohio, and it requested comments on that Plan. The CRS Site Group is the coordinating body for alleged potentially responsible parties at the CRS Site who conducted the CRS Site Remedial Investigation/Feasibility Study (RI/FS) under U.S. EPA's oversight. The CRS Site Group comments provide both substantive and procedural input for the administrative record arising from our significant experience at the Site. We appreciate the additional time for comments through September 13, 2007 authorized by U.S. EPA notice on www.epa.gov/region5/sites/crs/.

COMMENTS ON THE PROPOSED PLAN REMEDY

I. Background

1. The Remedial Investigation of the CRS Site was extensive and it thoroughly evaluated the risks posed by the chemicals of concern (COCs) that remain on the Site. Fifty soil borings were advanced on this small 2.5 acre site resulting in over 114 soil samples submitted to the laboratory for analysis. In addition, groundwater was sampled at 17 different locations and surface water and sediment were each sampled in seven locations. While the entire site has been

characterized, we focused particular effort on quantifying COCs in the areas of historic industrial use.

2. Any remaining risk posed by the CRS Site must be considered in historic and geographic context. The CRS Site covers less than 10% of a peninsula dominated by longtime historical industrial activity, including a chemical plant once owned by Harshaw Chemical, later owned by the Engelhard Corporation, and now owned by BASF. As indicated in the Proposed Plan, this peninsula has a 200-year industrial history that contributed COCs to the environment for 150 years before the solvent recovery operations at the CRS Site began. While it has been 25 years since CRS ceased solvent recovery operations, the adjacent chemical company continues to report releases of toxic metals to the air and surface water (via stormwater runoff). Given the location and the history of this industrial area, residential use is not a legitimate future land use for the CRS Site.

3. The potentially responsible parties who conducted the RI/FS did not own or operate the solvent recovery operations, so they are not responsible for the questionable housekeeping practices that may have contributed to the release of solvent to the ground. Our members are alleged to have merely generated some of the solvents that were cleaned for re-use at the CRS Site. The solvent recovery services offered by the Obitts companies and Chemical Recovery Systems, Inc. provided our members with an environmentally-preferred service that reduced the amount of solvents disposed in the 1960s and 1970s. Nonetheless, when contacted by U.S. EPA, CRS Site Group Members entered an agreement with U.S. EPA to conduct the site investigation and to fund U.S. EPA's oversight of the process. Numerous other companies elected not to cooperate with the Agency's request to conduct and fund the RI/FS. All work under the Group's agreement was completed to the satisfaction of U.S. EPA.

4. By 1983, enough remedial work had been performed at the Site to eliminate potential health risks to area residents. As indicated in the Proposed Plan (pp. 2-3), the site owner had ceased operating the solvent recycling business and removed all of the equipment and drums by 1981. CRS, Inc. then removed all visibly contaminated soil and replaced it with clean, clay-containing fill to the satisfaction of U.S. EPA in 1983. The clean, clay-containing fill material used to replace the excavated soil around the Brighton Still Building is now part of the soil in the northwest corner of the Site that U.S. EPA is arbitrarily proposing for excavation. The Site remained in this condition until 1999 when the City of Elyria Health Department and the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) conducted their Health Consultation for this Site after which they concluded that the CRS Site "currently poses no apparent public health hazard to area residents." According to their report, the Site was not contaminating the East Branch of the Black River (hereinafter "the River") or otherwise posing a health risk to those living or working nearby. See U.S. ATSDR, *Health Consultation* (July 2, 1999), at p. 4.

5. The 2003 RI surface water samples confirmed that the site is not adversely affecting the River. As indicated in the Proposed Plan (p.5), VOCs, SVOCs, and PCBs were not detected in any of the surface water samples. Arsenic levels were not above water quality standards in the surface water and sediment samples adjacent to the Site (and were even higher upstream from the Site indicating that the CRS Site was not the source of arsenic in the River). The sediment samples did not contain any of the VOCs or PCBs associated with the solvent recovery operations at the Site. The groundwater concentrations in the monitoring wells closest to the River already meet Ohio EPA water quality standards so there is no risk of the groundwater from the CRS Site causing the surface water to exceed health-based standards. See

Proposed Plan, at p. 8 ("The potential migration of groundwater to surface water is not a concern because current sampling results show that chemicals detected in the down gradient monitoring wells and chemicals detected in the surface water samples are below the Ohio EPA ***water quality standards***."). The groundwater with higher COC concentrations is further away from the River (near MW-6) and the data indicate that conditions are right for the natural degradation of these COCs to acceptable levels before they reach the River.

6. It has now been 24 years since the visibly contaminated surface soil was removed at this site. Precipitation has been moving unimpeded through soils and unconsolidated fill material on Site for even longer. If COCs were going to leach from soil into groundwater, it would have occurred long ago. Unfortunately, the protocol for assessing the risk that a soil concentration will affect groundwater does not take into account the number of years that natural forces failed to move these contaminants out of the soil. To address the improbable modeled risk that COCs could still leach from soils in the northwest corner, the Feasibility Study prepared by the CRS Site Group conservatively proposed that we cover this area with an impermeable barrier. This is an effective way to address this theoretical risk. To our stunned disbelief, U.S. EPA has proposed that the soil in the northwest corner (which is already adequately addressed by the impermeable barrier and poses no incremental risk to groundwater), be excavated and sent offsite for disposal at great cost and adding unnecessary risk. For the reasons set forth below, the CRS Site Group strongly objects to the partial excavation portion of the Proposed Plan remedy. Nothing in the record supports this measure as a means to achieve any incremental risk reductions.

II. Comments

7. The source removal to address "principal threat wastes" occurred at this Site in 1983. U.S. EPA's recommended alternative at p. 17 of the Proposed Plan attempts to justify removing the top four feet of soil in the northwest corner by stating it is necessary "to address the principal threat source material, which may migrate to groundwater . . . ." The Agency guidance on monitored natural attenuation (MNA) directs that source control measures to address "principal threat wastes" be taken at most sites where practicable to ensure timely attainment of the MNA remediation objectives. See U.S. EPA Office of Solid Waste and Emergency Response, *Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, Directive 9200.4-17P (April 1999), at pp. 12, 22. However, the Agency overlooks the fact that CRS, Inc. removed all visibly contaminated soil from this Site during the first phase of remediation in 1981-83. In requiring this removal of principal threat wastes during the initial stage of cleanup, U.S. EPA acted consistently with its subsequent MNA Guidance. Id. at p. 22 ("At many sites it will be appropriate to implement source control measures during the initial stages of site remediation ('phased remedial approach'), while collecting additional data to determine the most appropriate groundwater remedy."). When additional data were collected during the RI in 2003 at the CRS Site, MNA was justified as the appropriate groundwater remedy without excavating additional soil because the principal threat wastes had already been removed.

8. The soil in the northwest corner is not a principal threat waste. U.S. EPA defines principal threat wastes as "those source materials that are highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur." Id. at p.12, Footnote 14. ATSDR concluded back in 1999

that the Site did not pose a significant risk to human health even for onsite workers. U.S. ATSDR, *Health Consultation* (July 2, 1999), at p. 4. We also know that the soil in the northwest corner is not highly mobile because it has stayed in the soil for over 24 years in stubborn resistance to natural forces. The theoretical possibility that these soils "may become a source for additional groundwater contamination" (see Proposed Plan at p. 6) is not sufficient to render these soils a "principal threat." U.S. EPA relies primarily on the risk to an indoor industrial worker who apparently works in a non-existent basement with poor ventilation that is infiltrated by soil vapors at high concentrations. This is not a principal threat until an indoor area is constructed. It is arbitrary to assume basements that do not exist, and will not be allowed to be constructed due to anticipated institutional controls on future development at the site, when evaluating whether soil exposures will occur. The soils in the northwest corner can also be reliably contained under the impermeable barrier proposed in FS Alternatives 2-5. U.S. EPA routinely approves impermeable barriers and other caps as effective containment for COCs in soil. See U.S. EPA, *A Citizen's Guide to Capping* EPA 542-F-01-22 (December 2001), at p. 2 ("Caps have been used at hundreds of sites because they are an effective method for keeping wastes contained."); see also, U.S. EPA, *Record of Decision for Berkley Products Company Dump Site* (PAD980538649) (1996) at p.47 (finding the infiltration barrier remedy without excavation protective of human health and the environment despite PCE, Toluene, TCE, and Xylene concentrations higher than those measured in the northwest corner of the CRS Site). In 1981-83, U.S. EPA directed CRS, Inc. to excavate soil in the northwest corner and the Agency decided when enough soil had been removed to address the principal threat. The soil that remained was not a principal threat waste in 1983 and it is not a principal threat waste today.

9. The data do not support U.S. EPA's rationale for removing the soil in the northwest corner; e.g., that it will shorten the time needed for natural attenuation to achieve the remedial objectives for groundwater at the Site. The groundwater with the highest COC concentrations is in the southeast section of the Site near monitoring well MW-6. General fate and transport principles indicate that the higher concentrations in this area will take significantly longer to degrade than the lower concentrations in the northwest corner. It is indisputable that removal of soil in the northwest corner will not affect the groundwater concentrations near MW-6 because the groundwater flows from east to west across the Site. Since the time required to meet the remedial objectives for groundwater is driven by the attenuation of COC concentrations in the southeast portion of the Site, removing soil in the northwest will not shorten the time needed to meet the groundwater remedial objectives for the Site.

10. By contrast, the COC concentrations in the soil in the southeast corner of the site are much lower and are not considered a potential source to groundwater. The source removal efforts in this area focus on sump removal near MW-6 to support groundwater restoration. The higher groundwater COC concentrations are in the vicinity of the Rodney Hunt Still Building. The demolition activities common to remedial Alternatives 2-6 in the FS for the Site include the removal of an existing sump just north of this building and just east of the MW-6 groundwater monitoring well. During initial field work, the sump contained several inches of sludge that could be a continuing source contributing to elevated COC concentrations in groundwater in the area. Sump removal is the only additional source control necessary to support groundwater restoration and likely to expedite obtaining the long-term remedial objectives for groundwater at the Site.

11. Since soil excavation in the northwest corner will not expedite groundwater restoration, we should compare the partial excavation remedy (Alternative 6) and the impermeable barrier remedial Alternatives (2-5) based on how effectively and efficiently they eliminate risks posed by the COCs at the Site. Even setting aside the lack of risk reduction achieved by soil removal, soil excavation itself increases short-term risk to workers and area residents by exposing volatile organic compounds to the air where they may volatilize or travel on dust particles and become available to receptors through inhalation, ingestion, or dermal adsorption pathways. These risks are not present when the soils are left in place and covered with an infiltration barrier. Transporting excavated soil offsite for disposal also increases short-term risk for residents and workers along the transportation route as several hundred truck loads are hauled through downtown Elyria and nearby commercial and residential areas. U.S. EPA is proposing to excavate up to 3500 cubic yards of contaminated soil (0.5 acres to a depth of 4 feet), which will require approximately 300 truck trips. The site data suggest that the soil concentrations of concern can be addressed by excavating far less soil (see CRS Site Group Position Paper: *Source Removal Options in the Northwest Corner* (March 30, 2007) attached as Appendix A), but any excavation presents a greater short-term risk both onsite and offsite than leaving the soil in place under an infiltration barrier.

12. Additionally, the long-term risk associated with the excavation alternative (Alternative 6) is greater than the long-term risk associated with any of the alternatives involving an infiltration barrier (Alternatives 2-5). An infiltration barrier eliminates the theoretical leaching risk posed by any soil under the barrier. U.S. EPA proposes excavation of four feet of soil in the northwest corner and a clean soil cover that will permit precipitation to flow through the area. To the extent COCs remain in soils that would not be excavated under U.S. EPA's

Proposed Plan, the proposed excavation remedy would present far less long-term protection from a theoretical leaching risk than any of the listed alternatives involving an infiltration barrier. The simple fact is that the infiltration barrier remedy achieves greater short-term and long-term risk reduction.

13. U.S. EPA concerns that the infiltration barrier is not sufficiently permanent are misplaced. Infiltration barriers are a common U.S. EPA-approved approach to managing risk at cleanup sites. See 40 CFR 300.430(a)(1)(ii)(B) ("EPA expects to use engineering controls, such as containment for waste that poses a relatively low long-term risk or where treatment is impracticable."); see also *U.S. EPA,* Citizens *Guide to Capping* (December 2001) When COCs are left onsite under a barrier, U.S. EPA mandates cap inspection and maintenance obligations as part of the operation and maintenance plan for the Site. In addition, U.S. EPA is required to review the remedy every five years under CERCLA Section 121(c) to ensure that it remains protective. Any breaches in the barrier would be promptly identified during these inspections and remedied quickly and efficiently. To seriously question the permanence of infiltration barriers would unnecessarily call into question approved remedies at sites throughout the country. In fact, U.S. EPA will invariably be relying on an infiltration barrier at the disposal site where any excavated soil will end up. See U.S. EPA, *Presumptive Remedies: CERCLA Landfill Caps RI/FS data Collection Guide.*

14. In addition to posing inferior short-term and long-term risk reduction compared to the infiltration barrier, excavation dramatically and unnecessarily increases the cost of site cleanup. As U.S. EPA indicated at the Public Meeting, the $1.74 million total present-worth cost attributed to Alternative 6 in the Proposed Plan significantly underestimates the cost of the partial excavation remedy. The cost of the partial excavation portion of the proposed remedy

will depend upon how much soil is excavated and how it must be disposed (as hazardous waste or as nonhazardous solid waste). Despite the erroneous reference to 14,400 cubic yards in the Proposed Plan at p.14, U.S. EPA's cost estimate is based on 3500 cubic yards of excavated soil (0.5 acres excavated to 4-foot depth). U.S. EPA's partial excavation remedy would allow less soil to be excavated if pre-design data justify a horizontal cut line that is less than 0.5 acres to address concentrations of concern. Also, some of the demolition materials from the buildings on site may be available for use as backfill in the excavated cavity. However, assuming 3500 cubic yards of excavated soil going offsite and 3500 cubic yards of clean soil coming back on site and using U.S. EPA's estimate that 25% of the soil would be disposed as hazardous waste, the total present-worth cost of the partial excavation remedy is expected to cost $2.88 million (U.S. EPA estimated $2-3 million at the public meeting).

15. U.S. EPA's assumption that only 25% of the excavated soil will be hazardous is not supportable. This assumption begs the question, "Why would the other 75% of non-hazardous material be transported offsite at all?" A solid waste landfill receiving this non-hazardous soil will not provide greater long-term protection from residual COCs than the proposed infiltration barrier over soil remaining onsite. Also, if the soil does not fail the toxic characteristic leachate potential (TCLP) test that determines whether it must be disposed as hazardous waste, then its potential for leaching COCs to groundwater on site is removed and U.S. EPA's justification for excavation is further eliminated. Therefore, when estimating the cost of the partial excavation remedy, U.S. EPA should anticipate that 100% of the soil proposed for excavation will be disposed of at a hazardous waste landfill, but hold open the possibility that some of the soil will not fail the TCLP and, therefore, not require offsite disposal at all. The transportation and disposal costs associated with EPA's proposed remedy will more than double

when we assume 100% of the soil must be sent to a hazardous waste site resulting in remedial action costs well in excess of $3 million for a 2.5 acre site.

16. The remedy proposed by the CRS Site Group is supported by the RI/FS and meets the evaluation criteria. The Feasibility Study approved by U.S. EPA on September 11, 2006, evaluated four remedies that combined a full-site cover with an infiltration barrier cap on the 0.5 acres in the northwest corner. The four remedies differed only in the material used for the full-site cover: Soil, Stone, Asphalt, and Concrete. The CRS Site Group favors the soil cover remedy unless a different material is more compatible with expected future industrial uses at the time of installation. As stated in the Proposed Plan at p. 18, "These [four] alternatives are protective of human health and the environment and meet ARARs" (Applicable and Relevant or Appropriate Requirements). These alternatives also fully meet the criteria for acceptance by the State of Ohio. See Table 3.0 of the Proposed Plan, at p.19.

17. The containment remedies (Alternatives 2-5) meet all of the evaluation criteria at significantly lower cost. The Proposed Plan incorrectly indicates in Table 3.0 that the cover and cap remedies do not meet the "Reduction of Toxicity, Mobility, or Volume through Treatment" criterion. These containment remedies reduce toxicity and volume through the removal of sumps and building foundations that could theoretically be a continuing source material. Unlike partial excavation, the infiltration barrier is also designed to reduce the mobility of all COCs under the cap from soil to groundwater and from groundwater to surface water by limiting the flow of precipitation through this area. In addition, soil excavation and transport increases the mobility of volatile COCs by exposing them to the air and allowing them to volatilize.

18. The containment remedies achieve long-term effectiveness and permanence. As stated above, maintaining the infiltration barrier will be part of the annual O&M cost for the Site

to ensure its long-term effectiveness. If the disposal location for the excavated soil has an infiltration barrier or leachate collection system, it will still require maintenance to ensure long-term effectiveness. However, since U.S. EPA believes that 75% of the excavated soil will be eligible for disposal at a non-hazardous, solid waste landfill, the Agency cannot be assured that such barriers will even be required at the disposal location. Thus, the infiltration barrier remedies offer greater long-term effectiveness than partial excavation, which merely moves the COCs to another location. Partial excavation also has no incremental benefit on operation and maintenance costs because the duration of the groundwater monitoring at the site will be driven by groundwater unaffected by the proposed excavation.

19. Table 3.0 in the Proposed Plan should be updated to reflect Alternative 6 costs of $3-4 million. In the document circulated for public review, the cost comparison feature of Table 3.0 at p.19 of the Proposed Plan mischaracterizes the relative cost burden of the alternatives under consideration. Partial excavation (Alternative 6) will cost $3-4 million, which is 2-3 times more than the containment remedies (Alternatives 2-5). Alternative 6 costs strain the limits of cost effectiveness for a 2.5 acre site. When the more expensive remedy actually increases short-term and long-term risk, as it does here, choosing the remedy is an arbitrary and capricious abuse of regulatory discretion.

20. When evaluating the true cost burden to fund this project, many additional costs were not considered. The Proposed Plan remedy costs in Table 3.0 do not include EPA oversight costs, EPA contractor costs, or EPA past costs, which we understand may exceed $2 million. It also does not reflect the cost of the Remedial Investigation and Feasibility Study or the CRS Site Group costs searching for potentially responsible parties and encouraging their participation in

the investigation and cleanup of the CRS Site. The cost in the Proposed Plan ($1.74 million) underestimates total site costs by $5 million or more when all of these costs are considered..

COMMENTS ON THE RI/FS PROCESS

21. The CRS Site Group has actively and consistently engaged U.S. EPA to help chart the best approach for the CRS Site. The Administrative Order on Consent ("AOC") process for preparing the RI/FS was initiated with the entry of the AOC on May 29, 2002. From that point forward, CRS Site Group representatives met with U.S. EPA's RPM and her support team on numerous occasions in person and by telephone to receive input and direction regarding the RI/FS process and at the end of that process, when U.S. EPA approved the final deliverable on September 11, 2006, we had not been asked to evaluate or consider a partial excavation remedy for the CRS Site. Specifically, the CRS Site Group prepared the following documents and deliverables around which we discussed remedial options with U.S. EPA:

- The CRS Site Group prepared a Conceptual Site Model and a Field Sampling Plan, which focused on characterizing the site broadly with the benefit of historic information about site operations. U.S. EPA reviewed these documents and approved the Plan without suggesting that we characterize the northwest corner of the Site for excavation.
- On April 9, 2004, U.S. EPA approved the CRS Site Group memoranda on the development and screening of alternatives, including a memorandum on remedial action objectives and a memorandum on development and preliminary screening of alternatives for the Site. These Memoranda were preceded by a meeting with U.S.

EPA and its contractor to ensure that the scope of the alternatives being considered was appropriate. U.S. EPA did not discuss or suggest partial excavation.

- A Site visit was used to identify potential additional areas of concern. The RPM stated at that time that any hot spots detected along the river bank could be moved under the cap as the slope to the River was regraded. U.S. EPA was clearly not contemplating partial excavation instead of the infiltration barrier that provided a protective cap for these COCs.
- The site characterization summary, submitted on July 19, 2004, assembled field data and offered the conceptual analysis that the entire site posed sufficient contact risk to warrant a uniform cap remedy. U.S. EPA gave us every indication that a containment remedy would be the proposed remedy for the Site.
- The draft remedial investigation report and feasibility study went through three rounds of agency comments and responsive revisions before it was approved on September 11, 2006. This submission included a detailed analysis of remedial alternatives and a draft feasibility study report. U.S. EPA did not comment at any time during this process on the need for evaluation of an additional partial excavation remedy.

22. U.S. EPA first requested an evaluation of a partial excavation remedy on November 9, 2006, two months after we had received confirmation from the Agency that the RI/FS was complete. After waiting through 4.5 years of process designed to thoroughly analyze available alternatives, U.S. EPA requested that we provide a detailed cost estimate for partial excavation in two weeks. The CRS Site Group sought and received additional time and a conference call to discuss this procedural curve ball, but the Agency told us that it was

"exercising its discretion" to choose a remedy that was not considered in the Feasibility Study. The CRS Site Group submitted a Technical Memorandum on December 4, 2006, providing the information requested and which strongly opposed further consideration of the Partial Excavation remedy. We incorporate this memorandum into these comments for the record (attached as Appendix B). We also critiqued the Agency's cost estimate to ensure that the Proposed Plan would be evaluating the true cost of the partial excavation remedy. Given the true cost, the additional risk, and the procedural irregularities, the partial excavation remedy should be rejected in favor of one of the containment remedies (Alternatives 2-5) in the Proposed Plan.

23. The process U.S. EPA undertook in this instance directly contravenes established guidelines and the appropriate procedural methods that are ingrained in the CERCLA remediation process. As detailed in the final RI/FS, the approved course is to develop the Feasibility Study in four phases. The first phase develops an appropriate range of options to address contamination at the site. The second phase proceeds with the development of remedial alternatives to determine which of those warrant further evaluation. The third phase is a comprehensive and detailed analysis of the alternatives developed during the second phase. The fourth phase reaches a conclusion in the Feasibility Study as to the preferred remedial alternative. This process is an objective, pragmatic, and logical approach to focus the site investigation and develop remedial alternatives until a determination is made. What occurred here is exactly the opposite. After the CRS Site Group completed the four phases and presented its conclusion on the appropriate remedy, the U.S. EPA simply decided to ignore that evaluation and introduce an entirely new concept of excavation for the northwest corner of this site. This decision was arbitrary and capricious. Extensive time, effort, and resources of the CRS Site Group were used to conduct sampling, draft an RI/FS report, and have it reviewed and approved

by the U.S. EPA, only to have the agency disregard the results of that deliberate process and choose an undeveloped, over extensive remedial alternative at the last minute.

24. The determination of whether the preferred alternative is cost-effective must be a function of cost versus the level of protection provided. But U.S. EPA fails to demonstrate how the increased cost associated with partial excavation will provide better overall risk reduction or protection of human health and the environment. In fact, the Proposed Plan offers less short-term risk reduction and less long-term risk reduction than the containment remedies (Alternatives 2-5) presented in the approved RI/FS.

25. U.S. EPA should minimize costs that are not associated with environmental improvement. For instance, the CRS Site Group objects to the use of contractors by U.S. EPA to conduct oversight of our work at the Site because it adds an additional layer of oversight. The oversight costs at this site, $464,182.70, have been unusually excessive. Ohio EPA and U.S. EPA should be able to conduct their oversight obligations without adding a contractor that the Agency also must oversee. This adds a layer of oversight costs that is beyond the scope of recoverable agency oversight costs under CERCLA.

CONCLUSION

U.S. EPA's unilateral determination to require partial excavation is not supported by the record for this site and cannot be supported based on any risk reduction rationale. The soil posing a principal threat was removed over 24 years ago. The theoretical risks to groundwater posed by residual concentrations in the northwest corner soil are most effectively addressed by a cap. Natural attenuation is breaking down the COCs in groundwater before it reaches the river. Partial excavation will not expedite groundwater cleanup and it will increase risk onsite and

offsite. Also, the method by which U.S. EPA arrived at its after-the-fact remedial alternative was procedurally deficient. By failing to appropriately compare and analyze the risks, effectiveness, and costs of excavation, U.S. EPA has proposed an alternative that will not further overall protection of human health and the environment. For all of the foregoing reasons, the CRS Site Group respectfully requests that U.S. EPA select a remedial alternative from the approved RI/FS that uses an impermeable barrier to address the theoretical northwest corner risk instead of excavation.

APPENDIX A

CRS SITE GROUP POSITION PAPER
SOURCE REMOVAL OPTIONS IN THE NORTHWEST CORNER

The CRS Site Group has considered the information provided by USEPA during our March 22, 2007 meeting in Chicago. The Group is unwavering in its support for the preferred alternative set forth in the approved RI/FS and continues to urge EPA to again accept this alternative. The soil cap with an impermeable geomembrane liner in the northwest corner, presented as Alternative 2 in the FS, provides superior protection of human health and the environment. With the additional geosynthetic clay liner over the northwest corner, as presented during our meeting, there can be no question that the containment remedy satisfies the permanence and long-term effectiveness criterion under CERCLA. It is now clear that EPA is not disputing that the containment remedy in the approved RI/FS addresses all identified risks at the Site and it is an acceptable remedy under CERCLA criteria and EPA guidance.

It is also clear that EPA, despite the historic source removals of contaminated soils, drums, tanks and process/production activities, is seeking an additional source removal component to the remedy at this Site, which is not needed to address risk. EPA policy states that containment is one of the ways that source removal can be achieved.[1] It should follow that where containment addresses all identified site risks, additional source removal is not warranted. EPA has not identified any technical insufficiencies with the capping containment remedy presented in the approved FS. At this time, EPA has indicated that it would be moving forward with source removal with or without the Group's concurrence. Therefore, although the CRS Site Group remains adamant that the proposed additional source removal component to the remedy goes beyond addressing the agreed upon Site risks (and nothing in this paper should be viewed to the contrary), we will spend the remainder of this paper addressing ways that EPA's recently proposed source removal component of the remedy could be improved.

Source Removal Options

Since the soil cap remedy in the approved RI/FS already addresses all risks to the 1×10^{-6} risk level, a source removal at the Site, while unnecessary, could target high concentration "hot spots" for removal without being concerned with whether the contaminants left at the Site are going to present an unacceptable risk. We strongly believe that any source removal that the Agency proposes should be combined with the preferred remedy in the approved RI/FS - the soil cap and an impermeable clay layer or geomembrane liner over the northwest corner. Source removal with a more permeable cap will not be as protective of human health and the environment, and it will not be as effective in ensuring that residual concentrations are immobilized.

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[1] USEPA OSWER Directive 9200.4-17P - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites – April 21, 1999, at 21.

If the Agency pursues source removal to expedite closure, the method for removing the source should be the one that is most effective at removing the peak TCE concentrations of concern in the top four feet of soil around GP-37, GP-39 and GP-40. The Group looked at Soil Vapor Extraction and Targeted Excavation as two source removal alternatives. We concluded that SVE under a cap may work,[2] but to achieve the goal of expedited closure through source removal we needed to know how much VOC could be removed per unit of time and how much source removal EPA would require of the system before it could be closed. The unconsolidated fill at the Site makes it difficult to predict how quickly SVE could remove the TCE volatiles of concern. Additional data could be collected from the Site to evaluate SVE feasibility, but doing so prior to public review under EPA's current schedule is not realistic. If EPA continues to pursue source removal and wants to preserve SVE as a source removal option, the Agency could draft its Proposed Plan to allow the method of source removal in the northwest corner to be determined during the remedial design after obtaining the necessary data from the pre-design investigation.

The Group suspects, however, that the more effective and more timely source removal option will be a targeted excavation with predetermined cut-lines horizontally and vertically. U.S. EPA indicated that a site specific target level (SSTL) of 14 mg/kg for trichloroethylene (TCE) would be used in the northwest portion of the site to establish horizontal and vertical excavation cut lines. EPA used the existing chemical soil data in the RI to estimate that vertical excavation would achieve 14 mg/kg TCE or less after removing the first four feet of soil in the northwest corner. Figure 1 reflects The Group's analysis of existing data to estimate the horizontal extent of soils in the northwest portion of the site with TCE concentrations greater than 14 mg/kg (the soils surrounding GP-37, GP-38, GP-39, and GP-40). Based on EPA's proposed excavation depth of four feet, the volume of soils in the defined area to be excavated is estimated to be 1,200 cubic yards. This does not include the isolated elevated TCE reading at GP-45 (77 mg/kg), which could be excavated separately to four feet.

Since the soil cap remedy already adequately addresses agreed upon Site risk, confirmatory sampling of soils that will be under the enhanced cap would not be necessary. The excavation may extend beyond the predetermined cut lines to remove visibly affected soils or soils with high PID readings. Otherwise, excavating 1200 cubic yards (+ the GP-45 area) will achieve EPA's source removal objective, while the enhanced soil cap remedy in the approved RI/FS protects human health and the environment. Residual volatile constituents that may remain underneath the cap will continue to degrade over time as described in the approved RI/FS. Sample results from the bottom of the excavation are irrelevant to assessing the protectiveness and effectiveness of the remedy.

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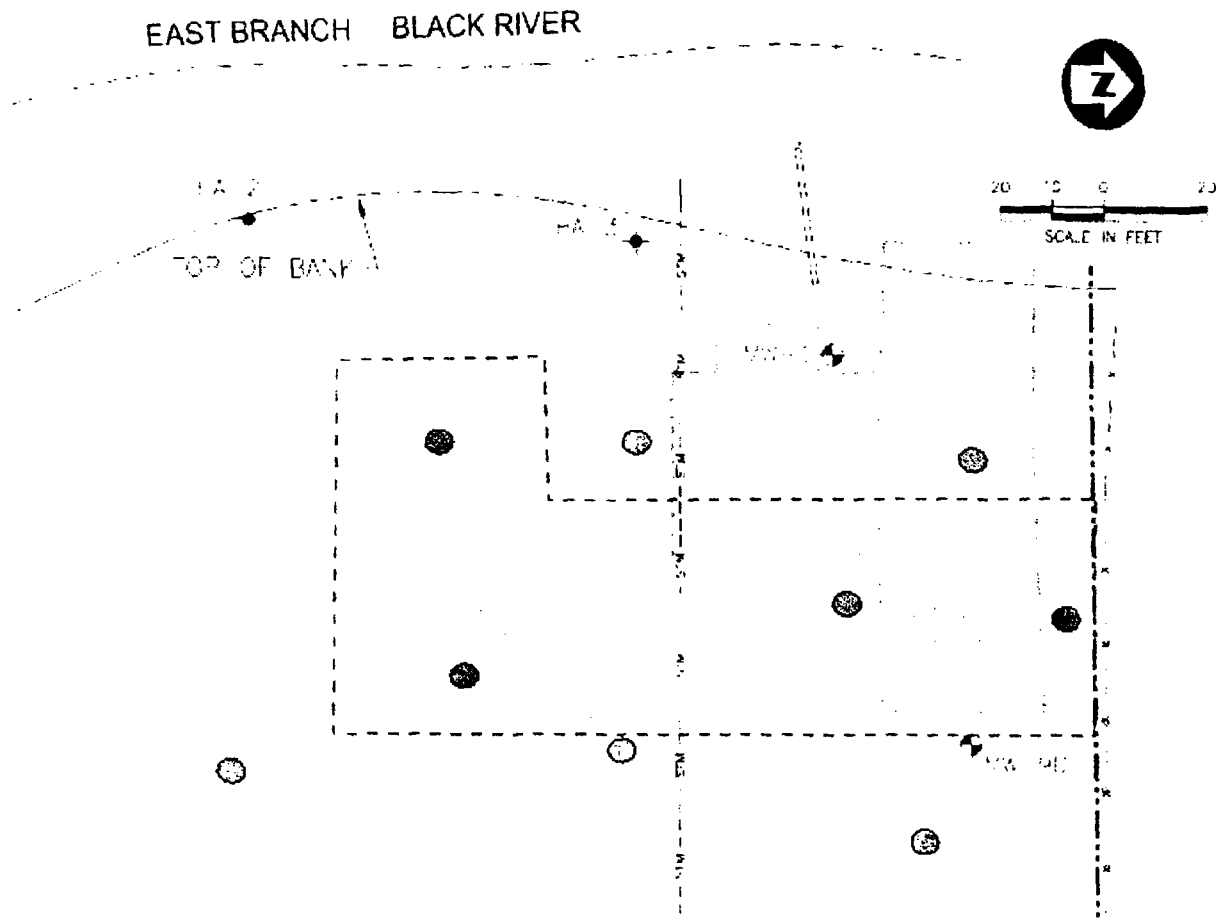
[2] EPA's START contractor's concerns with SVE feasibility at the Site are not insurmountable. (1) Conducting SVE under an impermeable barrier eliminates vertical preferential pathways. (2) Pulling vacuum only in the top four feet of soil, eliminates the risk of upwelling in groundwater present at 12 – 16 feet below ground surface. (3) By relying on the enhanced soil cap to address risk, SVE would be designed to achieve mass removal instead of risk-based cleanup goals.

As the excavation area is surrounded by the areas of the Site that are to receive a four (4) foot soil cap, the excavation area would require additional material and soil for backfill and grading purposes. EPA agreed to allow clean demolition debris from the buildings on site as the material for backfill in this area. The soil added to cap the northwest corner area, however, should be an engineered fill consisting of a layer of low permeability, clayey type soil to minimize future infiltration through the soil matrix in this area. Again, partial excavation with a more permeable soil cap is less protective of human health and the environment than the preferred enhanced soil cap remedy in the approved RI/FS.

Please address any questions to CRS Site Group Chair and Common Counsel, Douglas McWilliams at 216-479-8332 or dmcwilliams@ssd.com. This position paper is submitted in compromise negotiations and, as such, is inadmissible under Federal Rule of Evidence 408.



Area = 8100 sf
Volume = 1200 cy

PARSONS

OFFICES IN PRINCIPAL CITIES

19101 VILLAVIEW ROAD, SUITE 100
CLEVELAND, OHIO 44119
PHONE: (216) 486-9005
FAX: (216) 486-6119

142 LOCUST STREET
ELYRIA, OHIO

CHEMICAL RECOVERY SYSTEMS SITE
ELYRIA, OHIO

FIGURE 1

EXCAVATION LIMITS

APPENDIX B

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December 4, 2006

VIA E-MAIL AND
REGULAR U.S. MAIL

Gwendolyn Massenburg, Remedial Project Manager
U.S. EPA, Region V (SR-6J)
77 West Jackson Blvd.
Chicago, IL 60604-3590

Thomas C. Nash, Associate Regional Counsel
U.S. Environmental Protection Agency – Region 5
Office of Regional Counsel
77 West Jackson, C-14J
Chicago, IL 60604

Re: Chemical Recovery Systems Inc., Elyria, Ohio

Dear Ms. Massenburg and Mr. Nash:

Enclosed please find the following documents which respond to your November 9, 2006 question as clarified in our subsequent discussions with Joan Tanaka and Tom Nash:

1. CRS Site Group Technical Memorandum: Groundwater Discharge with new Figure 3-10 ("Groundwater Flow Map"); and

2. CRS Site Group Technical Memorandum: Feasibility Study Alternative 6A Asphalt Cap with NW Corner Excavation, Disposal, and Backfill with an itemized Alternate 6a Cost Estimate.

Please contact me with any questions or concerns. Also, we would appreciate advance notice of the rescheduled public meeting on U.S. EPA's proposed plan for the CRS Site.

Sincerely,

Douglas A. Mc Williams
Chairperson, CRS Site Group

DAM:cbk
Enclosure

cc: CRS Site Group

CRS SITE GROUP TECHNICAL MEMORANDUM
GROUNDWATER DISCHARGE

This Technical Memorandum contains the CRS Site Group Response to the following USEPA question posed November 9, 2006:

> ***1) Does the site ground water discharge to the river? If so, or not, please provide the information to support the determination.***

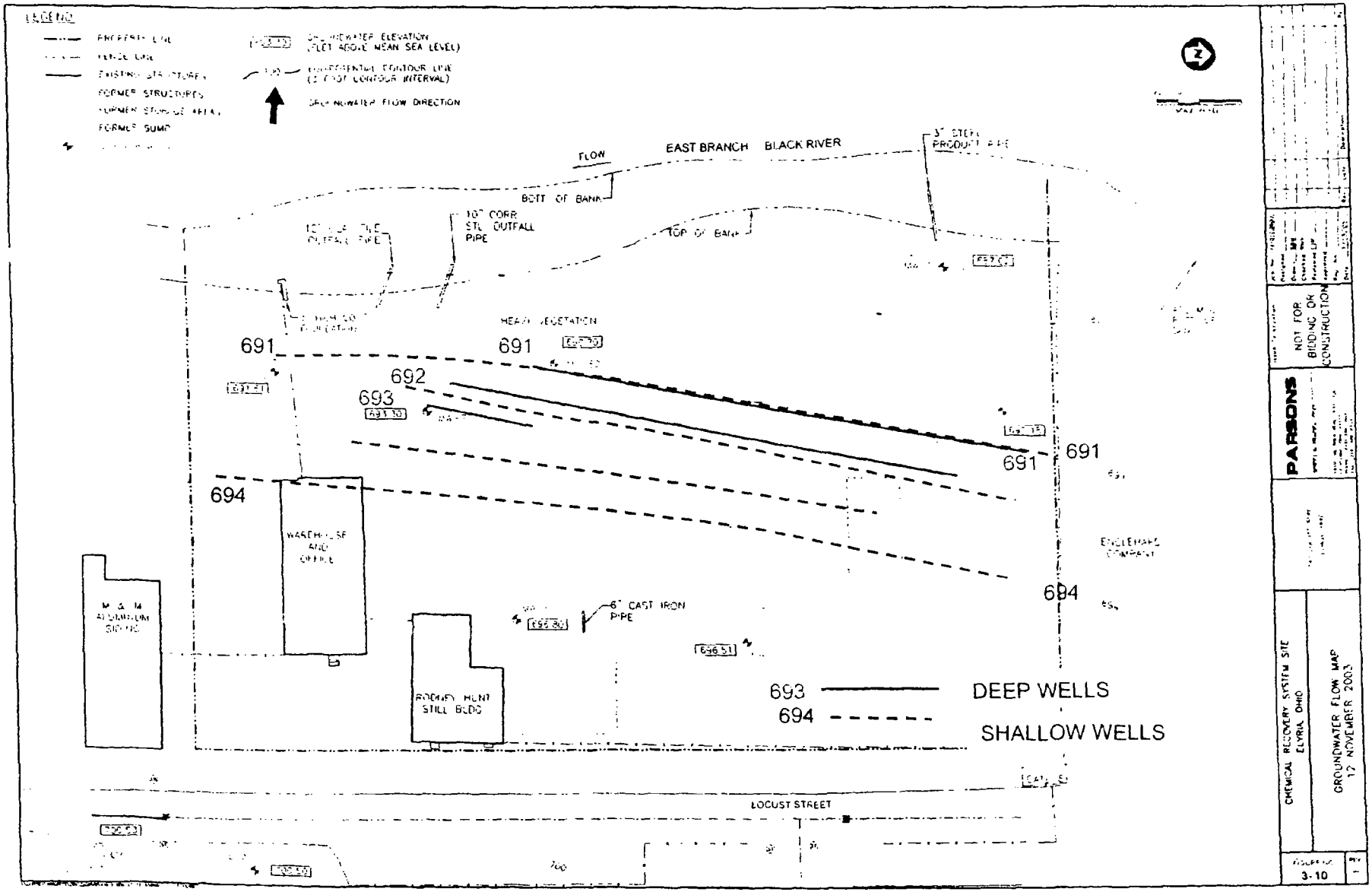
Yes, CRS Site groundwater discharges to the river. The groundwater flows east to west across the CRS Site and into the river as described in Section 3.3 of the RI Report (Rev.3). Figures 3-8 and 3-9 of the RI Report (Rev 3) demonstrate that groundwater elevations measured in November and December of 2003 are lower as we move from East to West across the site and towards the river, which supports the conclusion that shallow groundwater discharges into the river. We understand that USEPA is interested in confirming that this is true for groundwater at all levels. Our expert in hydrogeology indicates that the site data confirms that the groundwater flow is either upward or horizontal, resulting in flow to the river from the depths where the wells were screened. We have attached a new Figure 3-10 for the RI Report that summarizes the basis for his conclusions.

As discussed in detail below, available data support the conclusion that groundwater from the site flows to the river. A hydraulic gradient evaluation was performed to identify potential vertical migration at the referenced site. Using water level data for November 12, 2003, separate contours were constructed for the deep wells (MW-7D, ME-8D and MW-9D) and the shallow wells (MW-1, MW-5, MW-6, MW-16). The contours were constructed manually, using linear interpolation between pairs of wells. The contours are shown on Figure 3-10.

The map shows that the contours for the deep wells (solid red) are parallel to the contours for the shallow wells (dashed blue), which indicates that deeper groundwater flow is parallel to the shallow groundwater flow. The elevation 691 contour for the bedrock directly underlies the elevation 691 contour for the shallow wells. This shows that at the location of the contours, the potentiometric surface is vertical, which means groundwater flow is horizontal.

The elevation 692 and 693 contours for the deep wells are offset from the elevation 692 and 693 contours for the shallow wells. The offset indicates that at those locations, the potentiometric surfaces angle upwards, indicating an upward hydraulic gradient. For example, at well MW-7D, the groundwater elevation in the deep well is 693.3, while the approximate shallow groundwater elevation is 692.3.

The data also support the conclusion that contaminants detected at higher concentrations in the groundwater at the eastern edge of the site naturally attenuate before they reach the western edge of the site and before the groundwater reaches the river. For instance, TCE detected at 20,000 ug/l in MW-6 on the eastern side of the site drops to 0.32J and 1.5J ug/l at MW-7D and MW-8D respectively on the western side of the site. The low concentrations in the groundwater monitoring wells closest to the river support our conclusion that significant natural attenuation is mitigating any risk posed by contaminants in the groundwater as it reaches the river. There are no risks due to groundwater discharging into the River as the concentrations are below surface water and drinking water criteria.


FLOW
EAST BRANCH BLACK RIVER
BOTT OF BANK
TOP OF BANK
10" CORR STL OUTFALL PIPE
HEAVY VEGETATION
691
692
693
694
WAREHOUSE AND OFFICE
6" CAST IRON PIPE
ROOMS HUNT STILL BLDG
ENGLEHARD COMPANY
LOCUST STREET
693 DEEP WELLS
694 SHALLOW WELLS
NOT FOR BIDDING OR CONSTRUCTION
PARSONS
CHEMICAL RECOVERY SYSTEM SITE
ELYRIA, OHIO
GROUNDWATER FLOW MAP
12 NOVEMBER 2003
3-10

CRS SITE GROUP TECHNICAL MEMORANDUM
FEASIBILITY STUDY ALTERNATIVE 6A
ASPHALT CAP WITH NW CORNER EXCAVATION, DISPOSAL, AND BACKFILL

The CRS Site Group prepared this Technical Memorandum in response to the following question posed by U.S. EPA on November 9, 2006:

"What is the cost of excavating the 0.5 acres of soil that is most contaminated?"

To completely respond to this question, an additional remedial alternative (Alternative 6a) was developed that includes excavation of the northwest corner of the Site as well as a cap over the remainder of the Site. To assist your comparative analysis, this Technical Memorandum follows the same format used to describe Alternatives 1 to 6 in the Feasibility Study.

4.2.6a Alternative 6a – Asphalt Cap with NW Corner Excavation, Disposal, and Backfill

4.2.6.1a Description of Alternative

With this Alternative, the contaminated soil in the Northwest corner that has the most potential to leach VOCs to groundwater would be excavated and hauled off-site for disposal at a facility licensed to accept this waste. This area of the Site would then be backfilled with clean fill and covered in a similar manner as the remainder of the Site, unless this cover was not compatible with the future land use. The excavation would be limited to the 0.5 acre portion in the Northwest corner of the site identified in Figure 3.1 of the Feasibility Study as needing an infiltration barrier cap. The actual amount of contaminated soil removed from this area would be determined vertically and horizontally by testing to determine the soil volume with an elevated potential for leaching VOCs to groundwater. Soil excavation would continue until the predetermined areas are removed or the limits of the 0.5 acre excavation are achieved down to the bedrock. For the cost estimate, we assume the entire 0.5 acre Northwest corner will be excavated down to bedrock, which is estimated to average 15 feet in this area of the Site. The amount of soil in this 0.5 acre area assumed to be excavated in this alternative is 21,600 tons. Sheeting and shoring would be required along the north property line and the other slopes would need to be cut back. The groundwater table is near the bedrock surface. A contingency for groundwater and surface water (precipitation) handling is included in the costs.

Alternative 6a also includes an asphalt cap (Figure 3.2, Detail 1 of the Feasibility Study) that would cover the two-acre portion of the Site, which is suitable for a direct contact barrier. The asphalt cap would consist of an ODOT Item 304 crushed stone, six inches thick aggregate base and four inches of asphalt. The other 0.5 acres of the site would have the soil excavated as described above. The asphalt cap would also be placed over this 0.5 acre area if suitable for expected future land use of the Site.

The two existing buildings are assumed to be demolished and concrete and brick crushed and used on Site as backfill. Metal, glass, and asbestos containing debris is assumed to be disposed of offsite. The wood chips and other vegetation debris in the former aboveground storage tank area would be disposed of offsite. The slope of the ground surface near the riverbank would be regraded and erosion protection (riprap) would be installed. Penetrations in the existing storm sewer pipe, which is the property of the City of Elyria, would be sealed off. Repair of the storm sewer would be coordinated with the City of Elyria. A fence would be

placed around the entire Site perimeter (top of slope at River). Deed restrictions would be placed on the Site to limit the future use of the Site to commercial/industrial type applications that meet the assumptions in the baseline risk assessment and are not incompatible with Site conditions.

4.2.6.2a Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment by eliminating exposure to the contaminated soil through excavation and capping. In the short term, excavating the contaminated soil in the NW corner of the Site would increase the airborne exposure risk by volatilizing organic contaminants and generating dust that could contain other contaminants. While dust control methods could be employed to address particulate matter, it would be substantially more difficult to control volatile emissions that could result in odors and chemical exposure. This alternative would also increase the short term risk of exposure and injury from vehicle accidents or spills for those who live, work, or travel along the truck route used to transport the excavated materials, import clean fill, and deliver cap materials. If the entire NW corner must be excavated, over 1440 truckloads of contaminated soil and clean fill (a total of 2880 truck trips) would be transported through downtown Elyria. The asphalt cap and institutional controls would eliminate the risks associated with contacting the remaining soil. Potable use of groundwater is not expected and will be addressed through groundwater restrictions. There are no risks due to groundwater discharging into the River as the concentrations are below surface water and drinking water criteria.

4.2.6.3a Compliance with ARARs

Chemical Specific ARARs

The chemical specific ARARs for this proposed alternative are identical to those identified in Section 4.2.2.3 of the Feasibility Study.

Location Specific ARARs

The location specific ARARs for this proposed alternative are identical to those identified in Section 4.2.2.3 of the Feasibility Study.

Action Specific ARARs

The action specific ARARs for this proposed alternative are identical to those identified in Section 4.2.2.3 of the Feasibility Study except for the addition of the following:

- The Ohio Environmental Protection Agency (Ohio EPA) Division of Emergency and Remedial Response has issued "Asphalt Covers to Prevent Leaching at Industrial Sites" and "Use of Asphalt Covers over Contaminated Soil" (DERR-00-TDCE-001 and -004) to be considered when using an asphalt cap as a corrective action measure. These technical decision compendiums will be adhered to if the use of an asphalt cap is selected.
- The Toxic Substances Control Act (TSCA) regulates the handling and disposal of polychlorinated biphenyls under 40 CFR Part 761. This ARAR is applicable since some of the impacted soils to be excavated at the site contained concentrations of PCBs which exceeded 50 parts per million.
- Department of Transportation (DOT) hazardous material transport requirements regulate how contaminated materials may need to be handled, placarded and transported. This ARAR will be adhered to for all transported material leaving the site.

Other Criteria or Guidelines to be considered (TBC)

The TBC for this proposed alternative are identical to those in Section 4.2.2.3 of the Feasibility Study.

4.2.6.4a Long-Term Effectiveness and Permanence

For this alternative to remain effective, the cap must be maintained. Maintenance of the asphalt cap would be required as cracks develop over time. Because this alternative would leave hazardous substances onsite, a U.S. EPA review would be conducted every five years to ensure the remedy continues to provide adequate protection of human health and the environment in accordance with CERCLA §121(c). The soil removal activities should result in lower concentrations of VOCs in groundwater emanating from the northwest corner of the Site. Over time, however, natural attenuation of these constituents is expected to continue in a manner that is effective and permanent over the long term.

4.2.6.5a Reduction of Toxicity, Mobility, and Volume

This alternative is composed of two components (soil removal and a cap), which do not directly reduce toxicity or volume. Soil removal transfers the toxicity, mobility and volume of hazardous substances to the disposal facility. The asphalt cap would reduce mobility of the COCs in the soil. The process of natural degradation reduces the toxicity and volume of the contaminated material left onsite.

4.2.6.6a Short-Term Effectiveness

Dust production during the short term of the construction activities may be temporarily increased due to demolition activities, cap regrading, and excavation of the contaminated soils. Dust generation would be minimized through engineering controls required to be implemented by the Contractor specified in the construction documents. Volatile emissions that could cause odors and chemical exposure would be unavoidable given the size of the excavation and period of time needed to complete the soil removal work. Soil excavation will require additional worker protection equipment.

Alternative 6a introduces risks from transportation of contaminated materials through the community that are not part of Alternatives 1-5. An estimated 720 round trips would be required for hauling contaminated soil out of the Site through downtown Elyria, as well as an equal number of round trips for bringing clean fill into the Site, resulting in a total of 2,880 truck trips through downtown Elyria. Transportation-related risks on-site and along the truck route would increase in the short term. These include (1) the worker and inhalation risk associated with the release of volatile compounds during excavation and transportation of contaminated soils and (2) the risk of accident or spill during 1440 round trips. Additional trips to haul the cap materials (asphalt, stone, geotextile) would also be required. The cap materials would add an additional 170 round trips. The on-site environmental impacts for the remaining soil would be immediately eliminated upon construction of the cap. There are no short term issues related to groundwater either from human exposure or discharge into the River.

4.2.6.7a Implementability

The construction is estimated to take six months and require a significant number of vehicles to haul contaminated soil from the NW corner of the Site and bring clean fill to the Site. The equipment required to perform the work is readily available. Sheeting and shoring would be

required to excavate the contaminated soil at the property line. Excavation to bedrock poses some problems for securing the sheeting and shoring materials in a manner that is safe for the workers. Also, excavating close to a river poses implementation challenges to ensure that erosion and the impacted runoff is prevented from being discharged to the River. Handling of perched water and groundwater during the excavation process could present implementation problems if the water level is higher than anticipated or if the contaminants in the water require special handling. The water level, when measured was at the bedrock surface. A contingency has been added to the cost estimate for handling groundwater if necessary and for handing the precipitation that enters the construction area. Also, worker exposures could pose implementation obstacles during excavation activities.

The asphalt cap would be easy to construct. An estimated 8,600 square yards of stone (6" thick) and asphalt (4" thick) would need to be brought onsite and placed across the Site to create the asphalt cap plus an additional 2,500 square yards over the backfilled clean fill in the NW corner. An asphalt cap does not self-heal and would require inspection and repair of cracks. The asphalt cap is ideal however, as a parking lot or storage area. Monitoring for signs of failure or need of repair may be readily accomplished. Additional future actions are not prohibited from being implemented by this action.

4.2.6.8a Cost

The cost of this alternative is highly dependent upon soil contaminate concentrations and the type of facility, which is permitted to accept the excavated soil. Some of the soil may require treatment/disposal at a TSCA landfill and other soil may be classified as a hazardous waste due to the concentrations of VOCs. For purposes of this estimate it is assumed that 50% of the excavated soil that will be classified as hazardous waste and that 10 percent of this, 2,160 tons, will also be classified as TSCA waste (i.e. PCB Concentrations > 50 mg/kg). This is higher than the percentage estimated in Alternative 6 because this is the area of the Site with the highest soil contamination, thus it is more likely to be classified as a hazardous waste for disposal purposes. A waste handling contingency is used in the cost estimate to accommodate special waste treatment obligations under TSCA or RCRA. This alternative retains all costs associated with the cap remedies (Alternatives 2-5), except that the geosynthetic membrane over the 0.5 acres excavated and filled with clean material would not be necessary. The capital cost for construction of this Alternative is estimated to be $6,446,000. The 30-year present net worth including an annual OM&M cost of $50,000 is $7,009,000.

The cost if all of the excavated soil is classified as hazardous was also calculated. The capital cost for this circumstance is estimated to be $10,810,000. The 30-year present net worth including an annual OM&M cost of $50,000 is $11,373,000.

COST ESTIMATE

JOB NO. 741012
PROJECT CRS Site
AREA Cost Estimate for Asphalt and Stone Parking Lot Cap With NW Corner Excavated and Backfilled

Item	Description	Unit	Quantity	Unit Cost	Alt A	Alt B	Total Cost
1	Air Monitoring during Construction	Mo	6	$19,000			$114,000
2	Asbestos Survey	LS	1	$6,000			$6,000
3	Asbestos Removal	LS	1	$100,000			$100,000
4	Demolition of Warehouse/Office and Rodney Hunt Still Building	LS	1	$100,000			$100,000
5	Removal and crushing of foundations	LS	1	$35,000			$35,000
6	Clearing and Grubbing		2.5	$5,500			$13,750
7	Fencing around entire Site	LF	1300	$14			$18,200
8	Entrance Gate	LS	1	$10,000			$10,000
9	Deed restriction	LS	1	$2,000			$2,000
10	Sewer replacement / Plugging	LS	1	$12,000			$12,000
11	Regrade Slope to River	SY	2300	$3			$6,900
12	Application of Erosion Protection and Seeding of slope	SY	2300	$3			$6,900
14	Contact Cap Balance of the Site (6 "of ODOT 304 crushed stone and 4" asphalt						
a	Final Grade of the site	SY	8620	$2			$12,930
b	Installation of 6" of ODOT 304 Crushed Stone and 4 " Asphal	SY	8620	$15			$130,162
15	Installation of 6" of ODOT 304 Crushed Stone and 4 " Asphalt Pav. Over excavated and backfilled area	SY	2500	$15			$37,500
16	Construction Oversight	mo	6	$20,000			$120,000
17	Closure Report	LS	1	$35,000			$35,000
18a	Excavate, haul and Dispose soil offsite at Municipal LF	CY	14400	$37	50%	0%	$532,800
18b	Excavate, load, haul and Dispose soil offsite at HW LF	Tons	19440	$380	50%	100%	$7,387,200
18c	Excavate, load, haul and Dispose soil offsite at HW (TSCA) LF	Tons	2160	$500	50%	100%	$1,080,000
19	Sheeting and Shoring on North property line	SF	1950	$45			$87,750
20	Confirmatory Sampling	EA	20	$500			$10,000
21	backfill with clean fill	CY	14400	$14			$201,600
22	Water Handling Contingency	LS	1	$300,000			$300,000
	Contingency - Alternative A (50% Hazardous Waste)	%	10	$5,859,692			$585,969
	Contingency - Alternative B (100% Hazardous Waste)	%	10	$9,826,892			$982,689
	TOTAL - Alternative A (50% Hazardous Waste)				$6,446,000		
	TOTAL- Alternative B (100% Hazardous Waste)				$10,810,000		

Assumptions:

1 Excavation of soil from NW corner. Site is then converted into an Asphalt and Stone Parking Lot Cap
2 Assumed excavation depth based on average depth to bedrock for borings in NW corner of 15 feet, Soil Volume for 0 5 acre = 12100 C
3 Side walls cut back on 2:1 slope beyond 0.5 acre limit within site plus some soldier pile drilled into bedrock along Engelhard property
4 Additional soil for cutback - 270' x 15' x 30' /2/27 = 2250 CY, use 2300 CY
5 Assumes groundwater is at bedrock, right at excavation depth Contingency for water handling included
6 Assumes confirmatory sampling will occur Estimate up to 20 samples collected.
7 Item 13 from original Asphalt Cap Alternative deleted (geomembrane cap). Item 15 changed from seeding over geomembrane cap to asphalt parking lot over backfilled excavated area.
8 10 % of Hazardous waste is estimated to be TSCA waste